13.—The Angler-fish Ceratias holboelli from Western Australian Waters

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The first recorded adult specimen of the deep-sea angler-fish *Ceratias holboelli* from Australian water was taken from a whale's stomach at Albany in 1957. The specimen is figured and described.

On August 31st, 1957, a male sperm whale 38.5 ft in length, was caught at 35° 34′ S., 117° 36′ E. (38 miles south-west of Albany). When the stomach of the whale was opened on the flensing deck at Albany, it was found to contain a specimen of the deep-sea angler-fish *Ceratias holboelli* Kroyer (Fig. 1). The specimen was a fully metamorphosed female without an attached male. Its standard length was 48 cm.

This specimen of *C. holboelli* is the twenty-second adult female recorded throughout the world and the first to be taken in Australian waters. Bertelsen (1951) records all specimens known up to 1951 and more modern records are by Krefft (1954) and Van Utrecht (1957). The only previous record of this species from Australia is that of a female larva taken on February 25th, 1929, at Dana Station No. 3665, location 29° 37′ 5″ S., 156° 46′ E., off the east coast of Australia.

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The specimen was badly lacerated on the right side in the region of the exhalent aperture and in addition all fin rays were broken and lacked their distal ends. The specimen was otherwise in good condition. The eyes had completely regressed but could be exposed by an incision.

Bertelsen (1951) has suggested that there are two sub-species of *C. holboelli*, *C.h. holboelli* from the northern hemisphere and *C.h. tentaculatus* from the southern hemisphere. *C.h. holboelli* possesses a single escal filament, while *C.h. tentaculatus* possesses two filaments which may be further branched. Unfortunately our specimen (Western Australian Museum No. P4266) has a damaged tip to the escal bulb and does not provide further information in this regard.

Fig. 1.—Female deep-sea angler-fish *Ceratias holboelli* taken from the stomach of a sperm whale at Albany. (Photograph: Government Printer.)

The measurements shown in Table I were taken in conformity with those taken by Clarke (1950).

TABLE I

Measurements (in cm) of *Ceratias holboelli* (W.A.M. No. P4266)

Standard length	48.0
Length of illicum	8.8
Height of caruncle, stalk included	1.6
Snout to base of tentacle	9.5
Snout to dorsal fin	35.0
Snout to anal fin	37.3
Snout to base of pectoral fin	17.6
Base of tentacle on back to dorsal fin	5.6
Posterior caruncle to dorsal fin	4.4
Length of lower jaw	7.6
Greatest depth of body	17.2
Depth of caudal peduncle	4.2
Base of tentacle on head to base of tentacle on back	20.0
Dorsal fin to cadual fin	8.1
Anal fin to caudal fin	7.1
Base of anal fin	2.6

All of the measurements with the exception of the height of the caruncles, fit the allometric growth graphs drawn by Clarke (1950). The caruncles measure 1.6 cm in height, whereas in the specimens considered by Clarke (1950) not one of the measurements exceeds 0.75 cm. Clarke has shown that the maximum height of the caruncles is reached when the fish is about 12 cm standard length, after which they regress in absolute size. He suggests that the onset of this enantiometric (i.e. absolute negative) growth is associated with a crisis in the development of the fish, which is probably the attainment of sexual maturity. The caruncles of the new specimen, which is a mature fish, also differ in

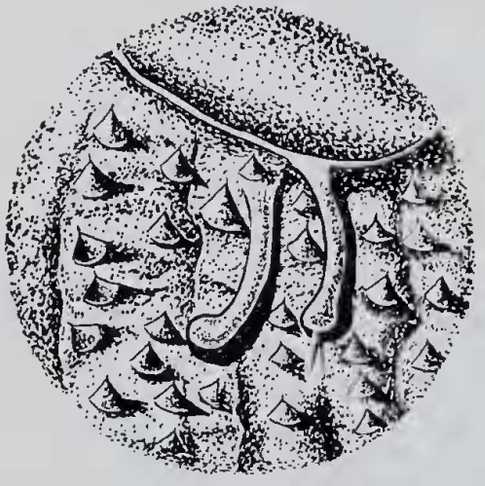

Fig. 2.—The caruncles showing a division into a head and stalk region. Diameter of field 4.3 cms. (Del. M. Walsh).

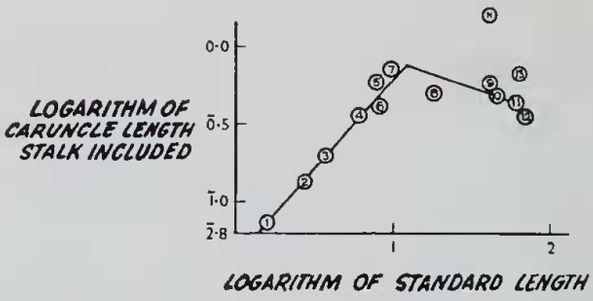

Fig. 3.—Caruncle length plotted against a standard length on a double logarithmic scale. (The numbers of the points are those allocated to specimens by Clarke 1950. The new specimen is designated N.)

shape from other mature fish studied. They are divided into a head and stalk region similar to the juvenile rather than the regressed club-like form of the mature fish (Fig. 2).

If the measurement for the new specimen is incorporated in Clarke's (1950) allometric growth graph for the "length of caruncle", (Fig. 3), it will be seen that it lies to the right of a projection of the line derived from the plotting of the caruncle heights of immature fish and above the line obtained for mature fish. Thus the point can not be definitely associated with either line. Also, it is impossible to state whether or not the absolute size of the caruncles decreased after metamorphosis. However, the fact that the caruncles still resemble the juvenile form points to the probability that growth has been progressive throughout the life of the fish.

It is apparent, therefore, that the growth of the caruncles of the new specimen has differed from those studied by Clarke (1950) and confuses his hypothesis that they reach maximum size at sexual maturity.

It could be argued that the females mature over a length range and that on maturity the caruncles cease to grow in length but gradually thicken to the club-like form. This would explain the differences in caruncle lengths and shapes. However, for such an explanation to hold true the range of maturity would have to be approximately 6 to 19 cm. This seems unlikely and, therefore, the growth of the caruncles of *Ceratias holboelli* remains an interesting problem.

References

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